

Borehole

# 52-06-07

Log Event A

## Borehole Information

Farm : <u>TY</u>	Tank : <u>TY-106</u>	Site Number : <u>299-W15-13</u>
N-Coord : <u>42,355</u>	W-Coord : <u>75,996</u>	TOC Elevation : <u>670.50</u>
Water Level, ft : <u>220.4</u>	Date Drilled : <u>9/30/1952</u>	

## Casing Record

Type : <u>Steel-welded</u>	Thickness, in. : <u>0.313</u>	ID, in. : <u>8</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>245</u>	
Type : <u>Steel-welded</u>	Thickness, in. : <u>0.250</u>	ID, in. : <u>4</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>192</u>	

## Borehole Notes:

This borehole was originally drilled in 1952 to a depth of 245 ft using 8-in.-inside-diameter casing. The 8-in. casing was perforated between 200 and 245 ft. The driller's log indicates that in 1975 the borehole was backfilled with gravel and cement to a depth of 236 ft. The driller's log did not list a reason for this action. In 1976, a 4-in.-inside-diameter casing was installed to 192 ft. According to Hanford Wells (PNL-8800), one of the pipes was perforated between the surface and 209 ft. Grout was added to the annulus between the ground surface and 187 ft. An unknown amount of grout was added between the 8-in. casing outer wall and the formation sediments. Water was encountered at 213.5 ft; therefore, the total logging depth achieved by the SGLS was 213 ft.

The casing thickness is presumed to be 0.237 in. for the 4-in. casing and 0.322 in. for the 8-in. casing.

## Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>04/1996</u>	Calibration Reference : <u>GJPO-HAN-5</u>	Logging Procedure : <u>P-GJPO-1783</u>

## Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>5/15/1996</u>	Logging Engineer: <u>Kim Benham</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>6.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>5/16/1996</u>	Logging Engineer: <u>Kim Benham</u>
Start Depth, ft.: <u>213.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>94.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Borehole

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Log Event A

Log Run Number :	<u>3</u>	Log Run Date :	<u>5/17/1996</u>	Logging Engineer:	<u>Kim Benham</u>
Start Depth, ft.:	<u>95.5</u>	Counting Time, sec.:	<u>100</u>	L/R :	<u>L</u> Shield : <u>N</u>
Finish Depth, ft. :	<u>5.0</u>	MSA Interval, ft. :	<u>0.5</u>	Log Speed, ft/min.:	<u>.5</u>

## Analysis Information

Analyst : S.D. Barry

Data Processing Reference : P-GJPO-1787

Analysis Date : 2/10/1997

### Analysis Notes :

This borehole was logged in three log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

A correction factor for the grout between the surface and 200 ft could not be applied because the thickness is not known; therefore, a correction factor for a 0.322-in.-thick casing was applied during analysis to provide an estimate of the radionuclide concentrations.

The man-made radionuclides Cs-137 and Co-60 were detected in this borehole. The presence of Cs-137 was measured almost continuously from the ground surface to about 3 ft and intermittently from 195.5 to 198.5 ft. The maximum Cs-137 concentration was 0.5 pCi/g at 1.5 ft. Measurable Co-60 concentrations were detected almost continuously from 200 to 213 ft. The maximum Co-60 concentration was 0.43 pCi/g at 204.5 ft.

The K-40 concentrations begin to increase at about 46 ft. The Th-232 concentrations begin to increase at about 92 ft. A region of lesser values for the K-40 and Th-232 exists between 101 and 118 ft. Beginning at about 200 ft, the K-40 concentration values begin to increase.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank TY-106.

### Log Plot Notes:

Separate log plots show the man-made (Cs-137 and Co-60) and the naturally occurring radionuclides (KUT). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.